E. Described by Reuss, 1872, Palaeontographica, vol. xx. part i. :—

31. *Eschara pupoides*, p. 107, pl. xxvi. fig. 5; Cenomanian; Saxony.
32. *Lepralia undata*, p. 104, pl. xxv. fig. 5; Cenomanian; Saxony.

F. Described in various works :—

33. *Cribrilina collaris*, Marsson, 1887, Pal. Abh. vol. iv. part 1, p. 98, pl. x. fig. 10; *mucronatus*-zone; Rügen.
34. *Cribrilina falcoburgensis*, Pergens, 1894, Bull. Soc. belge Géol. vol. vii. Mém. p. 188, text-fig. 7 on p. 188; Maastrichtian; Fauquemont.
35. *Escharipora immersa*, Gabb & Horn, 1862, Journ. Acad. Nat. Sci. Philadelphia, series 2, vol. v. p. 149; Danian; New Jersey.
36. *Cellepora incisa*, Hagenow, 1839, Neues Jahrbuch Min. p. 275, pl. iv. fig. 11; *mucronatus*-zone; Rügen.
37. *Cribrilina nitidiformis*, Vine, 1893, Brit. Assoc. Rep. for 1892, pp. 316, 336; Lower Senonian; Chatham.
38. *Escharoides peltata*, Römer, 1840, Verst. Norddeutsch. Kreidegeb. p. 14, pl. v. fig. 7; Senonian; Peine.
39. *Cellepora prona*, Stoliczka, 1872, Pal. Indica, series viii. vol. iv. no. 2, p. 12, pl. i. fig. 1; Arrialoor Group; Poodoopoliam.
40. *Cellepora scutigera*, Reuss, 1854, Denk. k. Acad. Wiss. Wien, vol. vii. p. 135, pl. xxvii. fig. 6; Turonian; Nefgrab.

The author hopes to be able in the future to expand the above revision, with its terse tabular diagnoses, into a volume of the 'British Museum Catalogue of Cretaceous Bryozoa.'

XLVII.—*Note on a new Baboon* (Simopithecus oswaldi, *gen. et sp. n.*) *from the* (?) *Pliocene of British East Africa.*

By C. W. Andrews, D.Sc., F.R.S. (British Museum, Natural History).

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[Plate XV.]

On his return journey from Karungu Dr. Felix Oswald* visited Homa Mountain, near the eastern shores of the Victoria Nyanza—a locality in which mammalian remains had been previously collected by Mr. Milliken. In addition to the remains of the elephant already known, he obtained

* 'Geographical Journal,' vol. xli. (1913) p. 114; also Quart. Journ. Geol. Soc. vol. lxx. (1914) p. 128.

numerous bones and teeth of Antelopes, *Phacochœrus*, and *Hippopotamus*, together with portions of the skull, mandible, and limb-bones of the large baboon which forms the subject of the present paper. The bones were found in a greenish-grey sandstone exposed in a low cliff near the lake-shore west of the Awaeh River; the age of the bed is doubtful, but probably it was late Pliocene or early Pleistocene.

PRIMATES.

Family Cercopithecidæ.

Among the more important specimens in Dr. Oswald's collection are the numerous remains of a large baboon, which present a number of peculiar characters. The principal pieces are:—(1) the facial portion of a female skull, the region behind the lower part of the orbits and the greater part of the premaxillæ being wanting; (2) a mandible, probably belonging to the same individual, wanting the right ramus behind the second molar and the angular region of the left ramus. These two specimens form the basis for the description given below. In addition to these there are a right maxilla with the molars in excellent preservation, a portion of a left mandibular ramus with pm_4–m_3, part of a smaller right mandibular ramus with pm_3–m_2, and the posterior portion of a left ramus showing the condyle and angle. There are also several odd teeth, including the lower canines of an old male. Altogether, the parts of the skull and mandible preserved indicate the presence of at least four individuals.

The other portions of the skeleton represented are portions of humeri, radii, ulnæ, ossa innominata, femora, the astragalus, calcaneum, and cuboid; these belong to several individuals, differing considerably in size. All the remains are highly mineralized and in a beautiful state of preservation; in nearly all cases they terminate in fresh fractures, showing that further collecting would probably yield more complete material.

Skull (Pl. XV. figs. 1 & 2).—The most important specimen is the facial portion of a skull, which, from the small size of the canine, is clearly that of a female. The whole of the cranial portion is wanting, the fracture occurring at about the middle of the orbits, only the lower portions of which are preserved; the base of the jugal region of the zygomatic arch is preserved on both sides, but is most nearly complete on the right. The nasals are wanting, as also are the tooth-bearing portions of the premaxillæ. The only other portion

of the skull preserved is an imperfect right maxilla (fig. 3) of a rather younger individual with the true molars in an excellent state of preservation.

The portion of the face beneath the orbits is short and considerably deeper than in *Papio*, *Theropithecus*, and in the female *Macacus*, the skulls most nearly resembling the fossil in this respect being those of males of *Macacus* and *Cercocebus*; this deepening of the face is consequent upon the large size of the maxillæ, which, again, seems to be correlated with the relatively large size of the cheek-teeth. The outer face of the maxilla is, on the whole, gently convex from above downwards, there being only a very slight concavity on the side of the face in front of the base of the zygomatic arch, as in *Macacus*. In the type-specimen of *Papio subhimalayanus*, Meyer, sp., this depression is likewise wanting, but here the depth of the maxillary region is much less. In *Papio* and *Theropithecus* this depression is well developed, and in the males may form a sharply defined fossa.

The *nasals* are entirely wanting, but it can be seen that they were small and that possibly the maxillæ met in the middle line above them; it is not possible to be certain what were their relations to the facial processes of the premaxillæ, which are the only portions of those bones remaining. These processes are short and probably only just overlapped the lower ends of the nasals, a condition resembling that seen in *Theropithecus*. In *Papio*, *Macacus*, and *Cercocebus*, on the other hand, the posterior ends of the premaxillæ extend considerably between the nasals and maxillæ behind the level of the posterior border of the narial opening.

The facial suture between the maxilla and jugal commences at about the inner third of the lower border of the orbits, and runs outwards and downwards on to the base of the zygomatic process, the lower edge of which is in part formed by the maxilla. The anterior face of the jugal, which is relatively large and massive, is gently convex; it looks more directly forwards and less upwards, and stands out farther than in *Papio* or, to a less degree, *Macacus*, in this last respect even surpassing *Theropithecus*, where also it is very prominent. The nearly vertical position of the jugal is correlated with the shortness of the face, the backward slope being especially marked in the long-snouted *Papio*. One consequence of this backward slope is that in *Papio* the orbit lies considerably behind the level of the last molar; in *Macacus* the lower border of the orbit is over m_2, while in the present specimen it is about over the anterior lobe of m_3.

Probably, however, the precise relative position with regard to the teeth varies considerably with age and sex.

There are two small facial foramina about 5 mm. apart on the suture between the maxilla and jugal ; the upper opening is about 1·5 cm. beneath the orbit; in other ape skulls examined these openings do not occur on the suture, but perforate the maxilla.

The palate is strongly concave from side to side, and the slit-like posterior palatine foramina are on the maxillo-palatine suture at about the level of the posterior lobe of m_3.

The Upper Teeth (Pl. XV. figs. 2 & 3).—In the skull above described the tooth-series from the canine to the last molar is well preserved on the right side, while on the left pm_3 is missing; the premolars and first molar are in an advanced state of wear, the pattern of the crowns being obliterated. A second specimen of the right maxilla (fig. 3) has m_1–m_3 well preserved and in a much less advanced state of wear, the posterior columns of m_3 being still intact.

The upper molars in their general structure are very similar to those of the recent baboons (*Papio*, *Theropithecus*), but differ in their relatively larger size, and especially in their greater length in proportion to their width; in the last character they resemble the molars of *Theropithecus* most nearly. The intermediate cusps are well developed, so that in wear the inner tubercles show a well-marked trefoil pattern. There is a well-developed cingulum on the front and back of the molars. The upper premolars present no special peculiarities, while the canine is small and projects little below the premolars, showing that the individual was a female. The form of the crown of the canine is almost identical with that seen in a female specimen of *Theropithecus gelada*.

The dimensions of the skull (in millimetres) are :—

Width at outer ends of base of zygomatic process	110
Depth of face from orbit to alveolar border	45
Width of palate between the first molars	28

The dimensions of the upper teeth (in millimetres) are :—

	Length.	Width.
m_3	15·5	13
m_2	15	13
m_1	12	11
pm_4	7	10
pm_3	7	8
c	8	7

The measurements in m_1–pm_3 are taken on the surface of

wear. The length of the molar series taken together is 43 mm.

Mandible (Pl. XV. fig. 4).—The mandible is very massively constructed, probably in correlation with the large size of the teeth. The symphysis is deep; its upper surface between the incisors, canines, and third premolars is only slightly concave from side to side, and slopes gently downwards and backwards till, at about the level of pm_4, it turns suddenly downwards to the deep geniohyal fossa. The shallowness and length of this upper part of the symphysis seem to be exceptional. In *Papio*, where also it is not very deeply concave from side to side, it terminates about the level of the back of pm_3; in *Theropithecus* this region is much more deeply concave and slopes more steeply downwards; in *Macacus* it is altogether shorter. In *Papio falconeri*, Lydekker, sp., from the Pliocene of the Siwalik Hills, the mandible is massive and deep, as in the present species; but even in this case the symphysis is shorter, and at the same time the teeth are relatively smaller. The outer face of the horizontal ramus beneath the premolars and first molar is nearly flat, showing little trace of the concavity seen in this position in *Papio* and *Theropithecus*, especially in the males. In *Macacus* the depression is less marked, especially in the females, and in the so-called *Papio falconeri* it is much as in the present specimen. The anterior border of the ascending ramus is straight or even slightly concave; in the other apes with which comparison has been made it is convex at least in its upper portion; this nearly straight anterior border is inclined considerably backwards. The coronoid process rises above the condyle; it is larger and more prominent than in *Macacus* and *Theropithecus*, and is thickened at its upper end. The condyle is wider from side to side than in *Macacus* and *Papio*, in this respect resembling that of *Theropithecus*; the greater width is accounted for by the considerable degree to which it projects on the inner side. In the type-specimen there is on the outer face of the ascending ramus, a little beneath the base of the coronoid process, a well-marked prominence, perforated below by a foramen which I have not seen in any other ape mandible. In the female mandible the outer face of the ascending ramus is only slightly concave in front of the ridge running down from the condyle, much as in *Macacus*, while in another jaw, probably of a male, this concavity is a little more marked, but less so than in the female *Theropithecus*; in the males of *Papio* and *Theropithecus* this depression is strongly developed. The angle of the jaw is not preserved in the

mandible above described, but in another specimen it is seen to be rounded, with a slightly inflexed margin. The dental foramen is in the position usual in the family.

Lower Molars (Pl. XV. figs. 4 & 5).—In the figured mandible the incisors and canines are represented by their broken bases only. The canines (*c.*) are oval in section and are small, showing that the individual was a female. The anterior premolar (pm_3) is likewise small, but its anterior face is enlarged and produced downwards and forwards to receive the bite of the posterior edge of the upper canine, as is usual in this group. The remaining teeth, though proportionately larger, are similar to those of *Theropithecus*, the intermediate cusps being well developed and there being an even larger talon in m_3. This talon consists of a large cusp and a raised border with well-marked crenulations connecting it with the postero-internal cusp; in *Papio* and *Macacus* the talon is proportionately much smaller.

The dimensions of the mandible of the type-specimen (in millimetres) are :—

Length of symphysis	46
Length from incisive border to back of condyle	130
Width of ascending ramus at condyle	48
Depth of horizontal ramus beneath m_1	33
" " " " m_3	31

The dimensions of the teeth (in millimetres) are :—

	Length.	Width.
pm_3	10	7
pm_4	9	8
m_1	11	?
m_2	14	?
m_3	20	11

The collection also includes a pair of very large lower canines (Pl. XV. fig. 6), presumably of an old male. That of the right side has lost most of its crown, but the left is nearly complete, only the tip of the root being lost. The root is very massive and oval in section, the long axis being antero-posterior; on the inner face there is a slight longitudinal groove. The crown is greatly worn on its posterior face, the surface of wear terminating below in a sharp oblique step. This condition is almost exactly similar to that seen in an old male *Theropithecus*, but here the tooth as a whole is much more slender. The length of the left tooth (so far as preserved) is about 46 mm., the width of its root from before backwards 17 mm., and that from side to side 11 mm.

From the comparisons given above, it will be seen that the present species differs in numerous points from the related living forms. In the case of the fossils also it has been shown to differ from the so-called *Papio subhimalayanus*, Meyer, sp., and from *Papio falconeri*, Lydekker, sp.*. In *Oreopithecus* of the Upper Miocene of Monte Bamboli the molars are considerably longer than wide, and Schlosser † remarks on their similarity to those of *Theropithecus gelada*, a species to which our fossil also approximates ; but, at the same time, there are important differences. Thus, in *Oreopithecus* the last upper molar is nearly quadrate in outline instead of being much longer than wide, and, lastly, in the molars of *Oreopithecus* the intermediate tubercles and the anterior and posterior portions of the cingulum are much less developed. *Mesopithecus*, from the Upper Miocene of Pikermi, apart from its much smaller size, differs in many respects, especially in the more quadrate outline of its upper molars and the fact that the last upper molar is considerably smaller than the tooth in front ; in the lower molars there is practically no anterior cingulum and the intermediate tubercles are scarcely at all developed.

Dolichopithecus, described by Depéret ‡ from the Middle Pliocene of Rousselon, differs in the smaller size and simpler character of the talon of the lower m_3, the large size of the lower pm_3, and the much shorter symphysis of the mandible, the horizontal ramus of which is nevertheless deep.

Libypithecus, described by Stromer § from the Middle Pliocene of the Wadi Natrun, differs widely in the relatively small size of the cheek-teeth, in the nearly quadrate outline of the molars, in which the anterior and posterior portions of the cingulum and the intermediate cusps are little developed. In fact, *Libypithecus*, *Dolichopithecus*, and *Mesopithecus* are all apparently much more nearly related to the Semnopithecinæ than to the true baboons. *Aulaxinuus*, described by Cocchi ‖, seems to be identical with *Macacus*

* Lydekker, 'Siwalik Mammalia,' Supplement i. p. 6, pl. i. figs. 3, 3 *a* (Palæont. Indica, ser. x. vol. iv., 1886).

† Schlosser, "Die Affen Lemuren etc. des europäischen Tertiärs," Beitr. Paläont. Œsterr.-Ung. Bd. vi. (1887) p. 16.

‡ Depéret, "Les Animaux pliocènes du Roussilon," p. 11, Mém. Soc. géol. France (Paléont.), mém. 3 (1890).

§ Stromer, "Mitteilungen über Wirbeltierreste aus dem Mittelpliocän des Natrontales (Ægypten)," Zeitschr. deutsch. geol. Gesellsch. Bd. 65 (1913–14). p. 350.

‖ Cocchi, "Su di due Scimmie fossili italiane," Bol. R. Com. geol. Ital. vol. iii. (1872) p. 68.

(*Pithecus*). Remains of other extinct baboons are known, but in most cases are too imperfect for useful comparison.

On the whole, it may be asserted that the specimen now described represents a new generic type distinguished by (1) the shortness of the snout, (2) the relatively large size of the cheek-teeth, (3) the great length of the molars in proportion to their width.

The name *Simopithecus* is proposed for this genus, the name of the species being *S. oswaldi*. The female skull and lower jaw described above are to be taken as the type-specimens *.

This comparatively short-snouted form, with its powerful dentition, may, perhaps, have been the forerunner of the baboons with the elongate muzzles, and in many respects resembles the Gelada baboon (*Theropithecus gelada*) of Abyssinia, in which the prolongation of the face is less marked than in most species of *Papio*, especially in the males.

It is unfortunate that the limb-bones are nearly all incomplete, so that their proportions cannot be estimated with certainty. Some of the specimens show that some individuals of this species attained a very large size.

The *humerus* is represented by the distal end of a large specimen and the lower three-fourths of a smaller one, both from the left side. In the large specimen the flange on the ulnar side of the articulation is less produced than in the mandrill (*Papio sphinx*) and the male of *Theropithecus*. Otherwise it is very similar to that of the mandrill, especially in the strong development of the internal condyle. The width of the distal articulation in the fossil is 34 mm.; in a large mandrill with a humerus 222 mm. long the width is 33 mm.; in the male *Theropithecus* it is 23 mm. The form of the distal end of the smaller humerus is almost exactly as in the male *Theropithecus*, but, judging from the ridges on the shaft, the bone was considerably shorter and

* A brief account of a number of mammalian remains from Central Africa has lately been given by Hans Reck (Sitzungsb. Gesellsch. Naturforsch. Freunde Berlin, nos. 3 & 7, 1914). These specimens are from beds, probably of Pliocene age, exposed on the sides of a gorge cutting into the edge of the Serengeti Plateau at Oldoway (lat. 3° S., long. 35° 25′ E.). Among the more important discoveries are two species of elephant, one apparently very similar to, if not identical with, that from Homa Mountain, a baboon which may be the same as that now described, a three-toed horse near *Hipparion*, and, lastly, a nearly complete human skeleton which Reck regarded as contemporary with the other remains, though this seems to be at least doubtful.

stouter ; the deltoid crest is much less developed than in the mandrill.

The *radius* is represented by one complete specimen and the upper ends of two others, one of very large size. The complete bone has its shaft less compressed and with a more rounded anterior face than in the mandrill ; the muscular ridges are less marked than in that animal, but, on the other hand, more so than in the male *Theropithecus*, in which, however, the bicipital tuberosity is more feebly developed. The bone, as a whole, is more slender than in the mandrill. Its dimensions (in millimetres) are :—

	Length.	Width of upper end.	Width of lower end.	Width of shaft.
Simopithecus	200	16	23	15
Mandrill.....	225	19	25	19
Male *Theropithecus* ..	190	13	23	15

Those of the corresponding bone in the mandrill and *Theropithecus* are given for comparison.

The large radius measures 22 mm. across its upper end, indicating a larger animal than any baboon with which comparison could be made.

The *ulna* is represented by one specimen from the left side, wanting the distal epiphysis. This is about the same size as the ulna of the Anubis baboon, but is more massive throughout. Its length (without the lower epiphysis) is 224 mm ; the ulna of the mandrill (measured in the same way) 220 mm., and that of *Theropithecus* 195 mm. It indicates a large animal, but not so large as that to which the larger radius belonged.

The *os innominatum* is represented by two imperfect specimens, one larger than the other and of very massive build. In both only the region of the acetabulum is preserved, the ends of the ilium, pubis, and ischium being lost. The pelvis is more heavily built than in the mandrill. The approximate antero-posterior diameter of the acetabulum is 30 mm., in the mandrill 28 mm., and in the male *Theropithecus* 25 mm.

The *femur* is represented by the proximal end of a large specimen and the shaft of a smaller one, both of the right side. In the large specimen the diameter of the head is 28 mm., the width of the neck 20 mm., the width of the upper end of the bone as a whole 56 mm. In a mandrill femur 258 mm. long the corresponding measurements are 25 mm., 18 mm., and 50 mm. The digital fossa is very deep. The shaft of the smaller specimen is nearly circular

in section as in the mandrill and *Theropithecus* ; its antero-posterior diameter is 18 mm., that from side to side 16 mm. There is a very strongly developed *linea aspera*.

The *astragalus* has a much less prominent flange on the inner side beneath the tibial facet and the surface for the internal maleolus is more concave than in the astragali of baboons with which it was compared.

The *calcaneum* does not present any special peculiarity; its length is 49 mm., in the mandrill skeleton used for comparison it is 46 mm. The *cuboid* is longer and narrower than in the mandrill.

So far as they go, the limb-bones seem to indicate that there probably was considerable difference in size in the sexes, the male being a very large and powerful animal.

EXPLANATION OF PLATE XV.

Fig. 1. Anterior portion of skull of *Simopithecus oswaldi*, from right side. (Type-specimen.) ¾ nat. size.
Fig. 2. Ditto, palatal view. ¾ nat. size.
Fig. 3. Right upper molars of a younger individual. Nat. size.
Fig. 4. Mandible, from left side. ¾ nat. size.
Fig. 5. Lower molars and premolars. Nat. size.
Fig. 6. Lower canine of male. Nat. size.

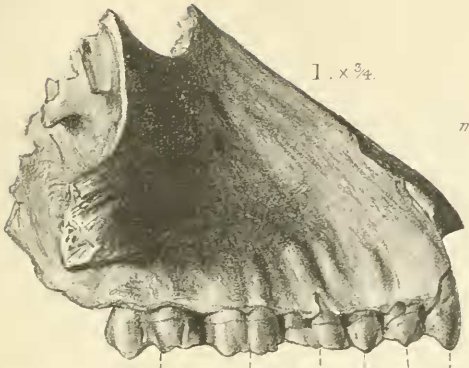
c., canine ; *pm.* 3–4, third and fourth premolars ; *m.* 1–3, molars.

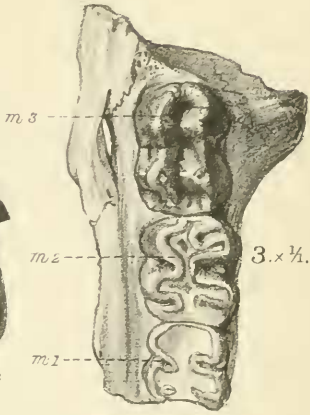
XLVIII.—*On some of the Cranial and External Characters of the Hunting Leopard or Cheetah* (Acinonyx jubatus). By R. I. Pocock, F.R.S., Superintendent of the Zoological Society's Gardens.

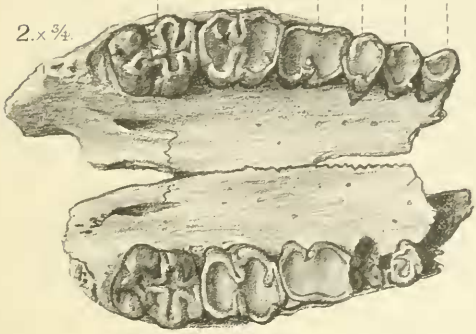
Since 1830, when the hunting leopard, commonly known in England as the cheetah, was severed by Wagler from the genus *Felis* under the name *Cynailurus*, there has been almost complete unanimity with regard to its claim to generic rank. In a great majority of text-books, monographs, and systematic lists it is quoted as *Cynælurus* ; but the oldest available title appears to be *Acinonyx*, proposed by Brookes in 1828 *.

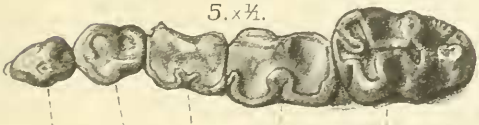
* Quoting from Palmer's Index, the full synonymy is:—

Acinonyx, Brookes, Cat. Anat. & Zool. Mus. of Joshua Brookes, p. 33 (1828); Burnett, Q. J. Sci. Lit. & Art, xxviii., 1829 (1830).
Cynailurus, Wagler, Nat. Syst. Amph. p. 30 (1830).
Guepardus, Duvernoy, L'Institut, Paris, ii. no. 51, p. 145 (1834).
Cynofelis, Lesson, Nouv. Tabl. Règne Anim., Mamm. p. 48 (1842).









G. M. Woodward del. et lith. H. Ith imp.

SIMOPITHECUS OSWALDI.